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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/350,956	07/09/1999	JEFFREY A. MILLER	0492611-0350	9008

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EXAMINER

TRAN, MINH LOAN

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 09/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applicati n No.

09/350,956

Applicant(s)

MILLER ET AL.

Examiner

Minhloan T. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-69 is/are pending in the application.
- 4a) Of the above claim(s) 15-26 and 45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14, 27-44 and 46-69 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-14, 27-44 and 46-69 in Paper No. 11 is acknowledged.

***Oath/Declaration***

2. The oath or declaration filed on 10/16/2000 is acceptable.

***Information Disclosure Statement***

3. If applicant is aware of any relevant prior art, he/she requested to cite it on form **PTO-1449** in accordance with the guidelines set forth in M.P.E.P. 609.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily

published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-4, 7-9, 13, 14, 27, 28, 30, 31, 35-39, 44, 46-56, 61-69 are rejected under 35 U.S.C. 102(b) as being anticipated by Hakimi et al. (5,260,957).

Hakimi et al. discloses a device comprising a primary light source 20; a population of photoluminescent quantum dots 14 disposed in a host matrix 12; wherein each quantum dot 14 of the population comprises a core of an independently selected size and composition and the population comprises a selected size distribution of quantum dots 14; the host matrix 12 is in optical communication with the light source 20 and is disposed so as to allow the light to pass there through, thereby causing the quantum dots 14 to photoluminesce light of a color characteristic of the size, size distribution, composition, or combination thereof. The host matrix 12, that is made of polymer such as polymethylmethacrylate (PMMA), is transparent to photoluminescent light emitted by the quantum dots 14 and to the light produced by the primary light source 20. A medium 16 interposed between the primary light source 20 and the host matrix 12. The core of each quantum dots comprises a material independently selected from the group consisting of ZnSe, ZnTe, CdSe, CdTe. Note figures 1 and 3 of Hakimi et al.

It is inherent that at least a portion of the quantum dots 14 have a bandgap energy smaller than the energy of at least a portion of the light produced by the primary light source, because the quantum dots 14 are energized by the light produced by the primary laser light source 20 and the fluorescence is induced.

Claims 1-3, 6-8, 13, 27, 30, 36, 37, 46-55 are rejected under 35 U.S.C. 102(e) as being anticipated by Soules et al. (6,252,254).

Soules et al. discloses a device comprising a primary light source 12; a population of photoluminescent quantum dots disposed in a host matrix 15; wherein each quantum dot of the population comprises a core of an independently selected size and composition and the population comprises a selected size distribution of quantum dots; the host matrix 15 is in physical contact and in optical communication with the light source 12 and is disposed so as to allow the light to pass there through, thereby causing the quantum dots to photoluminesce light of a color characteristic of the size, size distribution, composition, or combination thereof. The host matrix 15, that is made of polymer, is transparent to photoluminescent light emitted by the quantum dots and to the light produced by the primary light source 12. Note figures 2 and 3 of Soules et al.

It is inherent that at least a portion of the quantum dots have a bandgap energy smaller than the energy of at least a portion of the light produced by the primary light source 12, because the quantum dots are excited by the light produced by the primary laser light source 12 and the fluorescence is induced.

With regard to claims 62-67, applicant's claims do not distinguish over the Hakimi et al. reference or Soules et al. reference regardless of the process used to form the host matrix having quantum dots therein, because only the final product is relevant, not the process of making such as providing at least two precursor, combining the precursor

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materials and reacting the precursor materials to form a solid host matrix having quantum dots.

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above caselaw makes clear. See also MPEP 706.03(e).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5, 10-12, 29, 32-34, 40-43, 57-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hakimi et al. (5,260,957) in view of Bawendi et al. (6,322,901).

Hakimi et al. discloses all the subject matter claimed except for the quantum dots

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comprise an overcoating of at least one material selected from the group consisting of ZnO, ZnS, ZnSe, ZnTe, CdO, CdS, CdSe, CdTe, MgS, MgSe .... However, Bawendi et al. discloses quantum dots selected from the group consisting of CdSe, CdS, CdTe having an overcoating selected from the group consisting of ZnS, ZnSe, CdS, CdSe. Note figures 1, 2 and columns 4-8 of Bawendi et al.

It would have been obvious to one of ordinary skill in the art to overcoat the quantum dots of Hakimi et al. with the overcoating such as taught by Bawendi et al. in order to obtain a photoluminescence having quantum yields of greater than 30%.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minhloan T. Tran whose telephone number is (703) 308-4919. The examiner can normally be reached on Monday-Friday 9:00 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

mlt  
09/2002

  
Minhloan T. Tran  
Primary Examiner  
Art Unit 2826